SYLLABUS
PHYS 331 SPRING 2015

INSTRUCTOR CONTACT INFORMATION

Instructors: Stan Dodds
Offices: 215 Herzstein Hall
Email: dodds@rice.edu
Office Hours: Any time I'm in

Frank Geurts
236 Hermann Brown Hall
geurts@rice.edu
Most afternoons, or by appointment

COURSE OBJECTIVES AND LEARNING OUTCOMES

In this laboratory course students will learn some of the basic technologies needed to undertake experimental work in physical science and analyze their data.

By the end of the course, students will have demonstrated the ability to
- Design and prototype simple analog and digital circuits that may be used for data acquisition
- Employ basic noise reduction techniques, including digital signal averaging and lock-in detection
- Configure a simple particle-counting system to obtain specified information
- Utilize more complex computerized data acquisition systems
- Apply appropriate statistical and graphical tools to analyze data

TEXTS AND MATERIALS

The course web page, http://www.owlnet.rice.edu/~dodds/phys331.html, contains extensive resources for all the required exercises. The textbook by Bevington, "Data Reduction and Error Analysis" (any edition) is a useful resource for statistics and data analysis.

Apparatus for all the exercises will be available in the Physics Teaching Lab area in the basement of Herzstein Hall. You may obtain the door code from Dr. Dodds in HRZ 215. The building is accessible outside of normal hours with a Rice ID through the north-side door (facing Duncan Hall).

The experimental work is semi-self-paced, but you must read the relevant safety notes before beginning experimental work. Reviewing the experimental set up with the instructor will save you the time and wasted effort otherwise spent chasing parts or malfunctions. In the event that problems arise in the course of your work, get help from the instructor. You are not expected to solve all possible problems on your own.

REPORT DEADLINES

The graded work for the semester will consist of:

A report on the Analog Circuits exercise: Due by 5:00 PM Tuesday February 3, 2015.
A report on the Digital Circuits exercise: Due by 5:00 PM Friday February 27, 2015.
The Data Analysis exercise: Pledged problem set available for pickup from HRZ 215 Monday March 9, 2015; Due by 5:00 PM Monday March 16, 2015.
A report on the Noise Reduction exercise: Due by 5:00 PM Wednesday April 1, 2015.
A report on the Particle Counting Exercise: Due by 5:00 PM Tuesday April 28, 2015.

In order to complete the course you should plan to work at least one afternoon per week, preferably on a regular schedule. The deadlines define a minimum pace for successful completion of the course. Note also that the amount of equipment is limited, so it will be impossible for all students to do an experiment immediately before a deadline.

GRADE POLICIES

Early submissions are always welcome, while late work will be penalized at the rate of 5 percentage points per day late. Reports and problem sets will not be accepted more than 10 days after the due date or the end offinals, whichever is earlier. All assignments must be completed in order to pass the course.

Rice Honor Code

In this course, all students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at http://honor.rice.edu/honor-system-handbook/. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.

You may work with a partner if you wish, but it is not required. In any case, each student is expected to be familiar with all phases of the experiment and to produce an independent report of the results.

Disability Support Services

If you have a documented disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Disability Support Services (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Syllabus Change Policy

This syllabus is only a guide for the course and is subject to change with advanced notice.